

FIG. 2

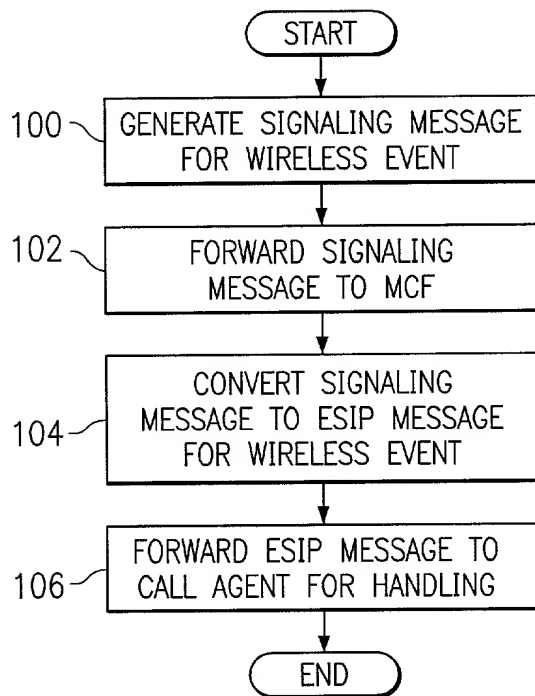


FIG. 3

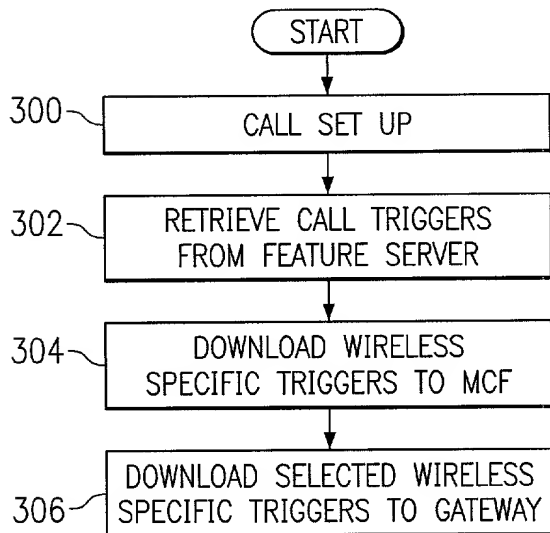
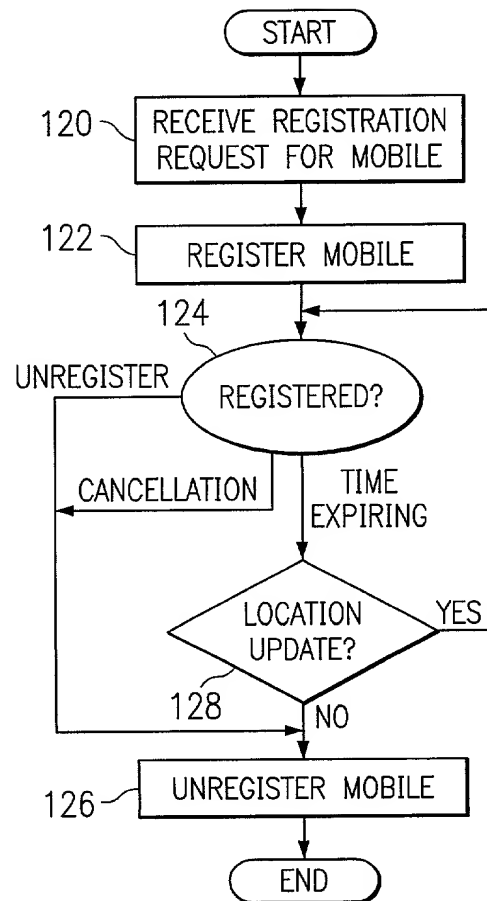


FIG. 10

FIG. 4

SIP MESSAGES FOR BASIC SERVICES AND MOBILITY MANAGEMENT

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
MOBILE REGISTRATION (LOCATIONUPDATEREQ)	IS-634	REGISTER	FROM:MIN EXPIRE:X	NONE	ESN, CELLID	REGNOT SENT TO VLR/HLR FOR INITIAL REGISTRATION
MOBILE UNREGISTERS	IS-634	REGISTER	FROM:MIN EXPIRE:0	NONE	ESN	REGCANC SENT TO VLR/HLR
LOCATIONUPDATEREQ (LUR)	IS-634	REGISTER	FROM:MIN	LOCATIONUPDATEREQ	ESN, CELLID	SUBSEQUENT LOCATION UPDATES
REGISTRATION CANCELLATION FROM HLR/VLR	IS-41	REGISTER	TO:MIN EXPIRE:0	NONE	ESN	REGN CANCELLATION RECEIVED BY CA WHEN MS MOVES TO ANOTHER SERVING MSC

FIG. 5

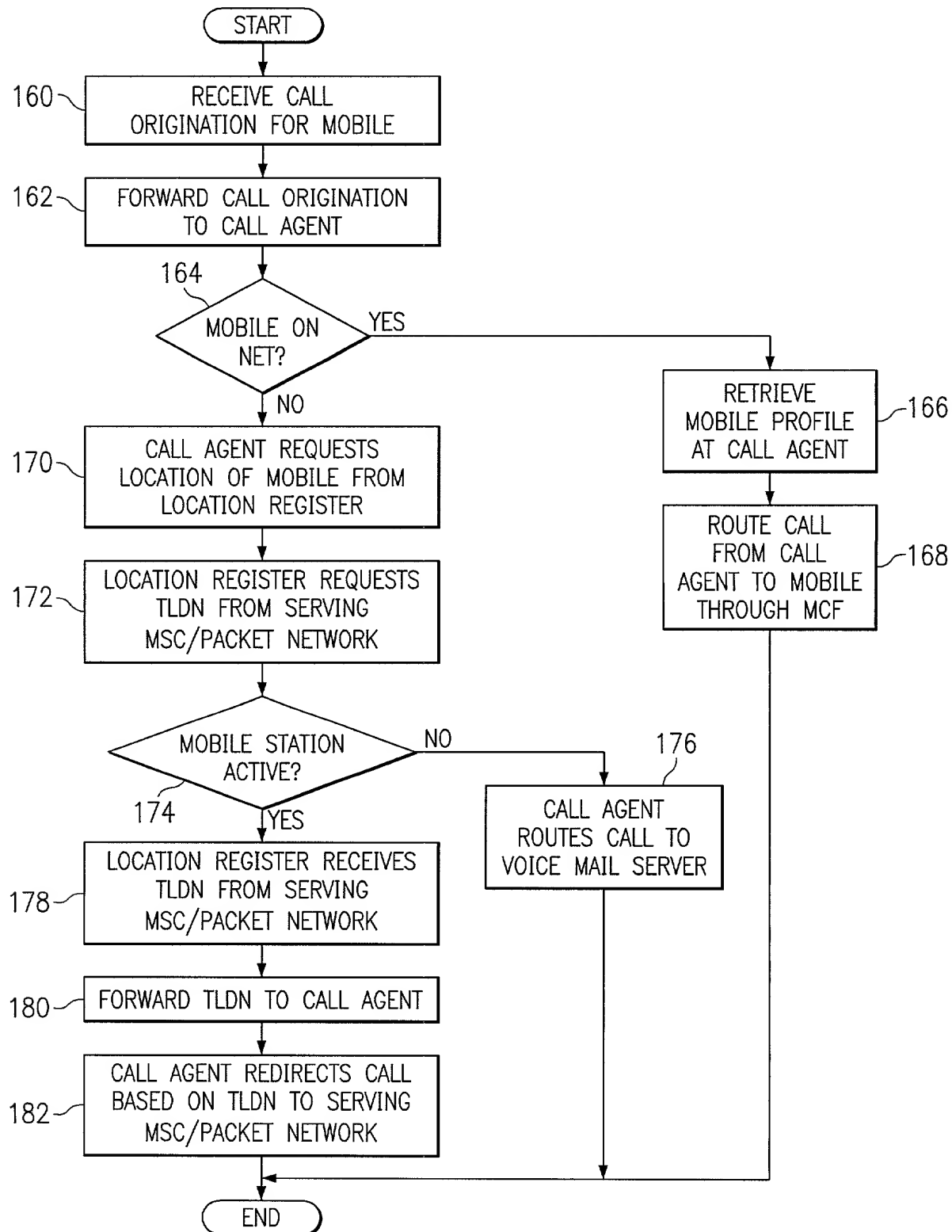


FIG. 6

SIP MESSAGES FOR BASIC CALL HANDLING

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
ROUTERREQ FROM HLR	IS-41	INFO	TO:MIN	ASSIGNTLDN	NONE	CA RECEIVES ROUTERREQ FROM HLR AND NEEDS TO ASSIGN A TLDN FOR AN ONNET MS
RESPONSE TO SIP INFORMATION		200 OK	FROM:MIN	ASSIGNTLDN	TLDN	MCF ASSIGNS THE TLDN AND NOTIFIES THE CA WITH THE MIN TO TLDN ASSOCIATION
TLDN TIMER EXPIRY	INTERNAL	INFO	FROM:MIN	DEASSIGNTLDN	TLDN	TLDN TIMER EXPIRED. TLDN IS RELEASED AND MIN NO LONGER ASSOCIATED TO TLDN. THE TLDN IS ALSO RELEASED WHEN THE CALL ARRIVES AT CA/MCF

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FIG. 7a

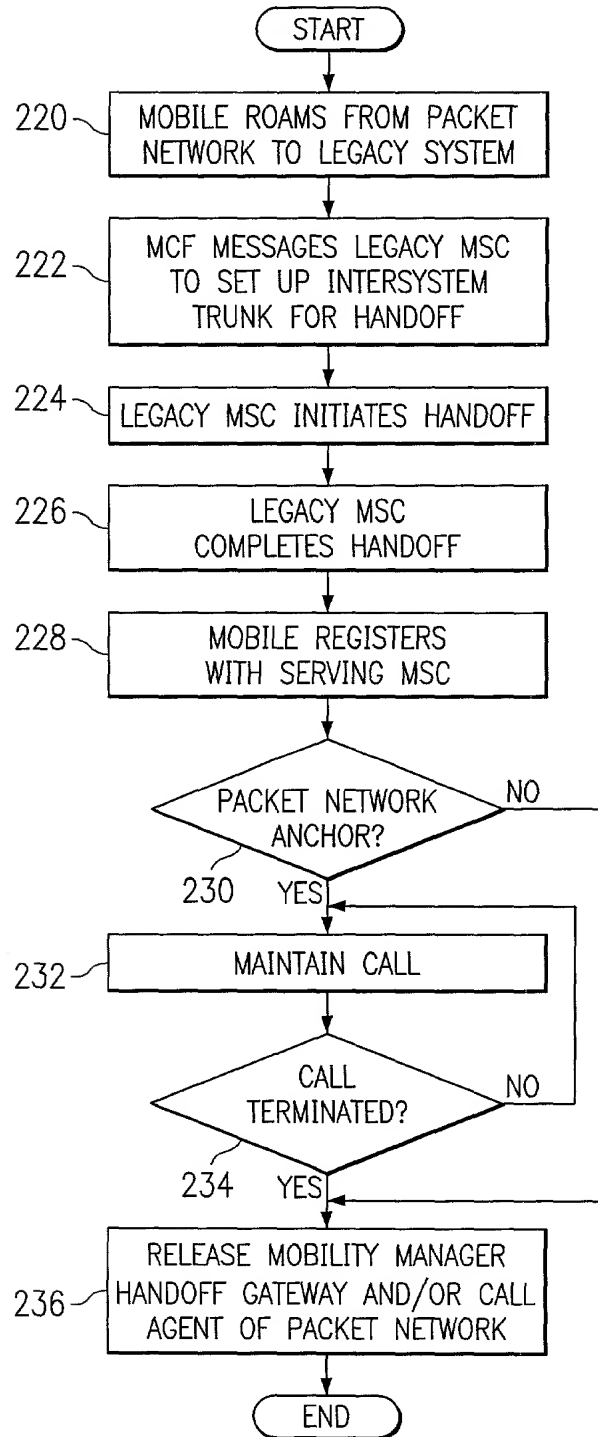


FIG. 7b

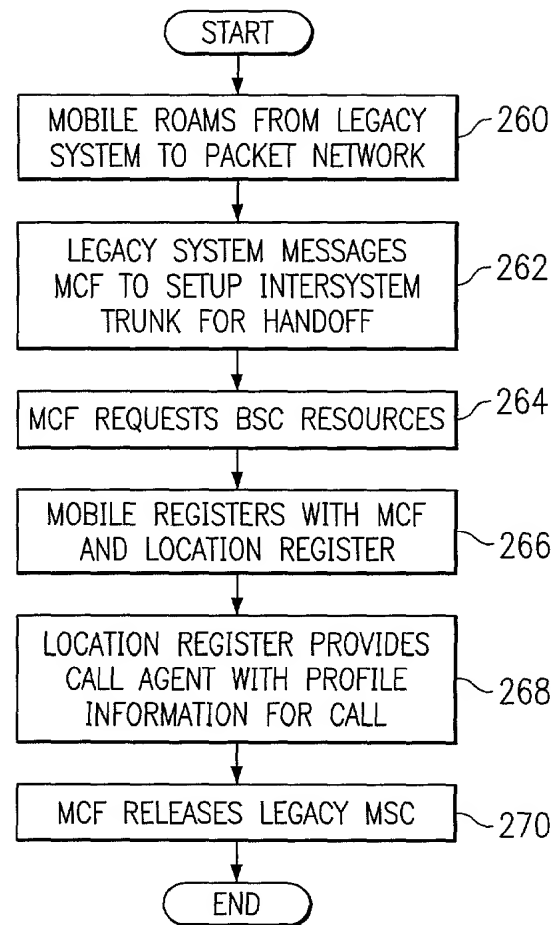


FIG. 8a

SIP MESSAGES FOR PACKET NETWORK TO LEGACY SYSTEM HANDOFF

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
HANDOFF REQUIRED FROM MS FOR HANDOFF TO LEGACY NETWORK	IS-634	NONE	NONE	NONE	NONE	MCF SENDS A FACILITIES DIRECTIVE2 REQUEST OVER IS-41 I/F WITH TARGET CELLID, MIN, ESN NUMBER AND HANDOFF CKT ID TO SETUP INTERSYSTEM TRUNK FOR HANDOFF TO LEGACY NETWORK AND START INTER-SYSTEM HANDOFF
FACILITIESDIRECTIVE2 RESPONSE FROM TARGET MSC	IS-41	NONE	NONE	NONE	NONE	RESPONSE FROM TARGET MSC AFTER IT INITIATES HANDOFF
MOBILEONCHANNEL RECEIVED BY MCF	IS-41	NONE	NONE	NONE	NONE	SENT BY TARGET (LEGACY) MSC AFTER COMPLETION OF HANDOFF TO LEGACY NETWORK
REGCAN FROM HLR RECEIVED BY CA	IS-41	REGISTER	TO:MIN EXPIRE:0	NONE	NONE	AFTER COMPLETION OF HAND OFF TO LEGACY NETWORK THE MS GETS REGISTERED AT ANOTHER SERVING MSC. NOTE CALL STILL REMAINS ACTIVE
FACILITIESRELEASE RECEIVED BY MCF	IS-41	BYE	FROM:MIN	NONE	NONE	IF THE MCF WAS THE ANCHOR MSC, FACILITIESRELEASE IS RECEIVED FROM THE SERVING MSC. THE HANDOFF CIRCUIT ON THE HANDOFF GATEWAY IS ALSO RELEASED AND CA IS NOTIFIED TO RELEASE THE CALL

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FIG. 8b

SIP MESSAGES FOR LEGACY SYSTEM TO PACKET NETWORK HANDOFF

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
FACILITIESDIRECTIVE2 REQUEST FROM LEGACY MSC	IS-41	NONE	NONE	NONE	NONE	SERVING LEGACY MSC SENDS A REQUEST (WITH ESN, TARGETCELLID, HANDOFF CKT ID ETC) OVER IS-41 I/F TO MCF TO SETUP THE TARGET BSC. MCF SENDS HANDOFF REQUEST TO TARGET BSC TO ALLOCATE RESOURCES
FACILITIESDIRECTIVE2 RESPONSE TO LEGACY MSC	IS-41	REGISTER	TO:MIN	NONE	ESN, CELLID INFORMATION	WHEN A MS MOVES INTO THE PACKET NETWORK AREA, THE MS NEEDS TO BE REGISTERED IN THE MCF. MCF ALSO REGISTERS THE MS WITH THE HLR USING REGISTRATION NOTIFICATION REQUEST
HANDOFF COMPLETE	IS-634	NONE	NONE	NONE	NONE	AFTER COMPLETION OF HANDOFF TO PACKET NETWORK, I.E WHEN MS CAN SUCCESSFULLY BE ACCESSED BY BSC IN THE PACKET NETWORK, MCF WILL SEND MOBILEONCHANNEL TO THE CURRENT SERVING MSC. MCF THEN SENDS MOBILEONCHANNEL TO THE SERVING MSC. MCF ALSO SENDS REGNOT TO REGISTER THIS MS WITH HLR. WHEN REGNOT RESPONSE RECEIVED, CA IS NOTIFIED VIA SIP REGISTER MESSAGE WITH PROFILE INFORMATION

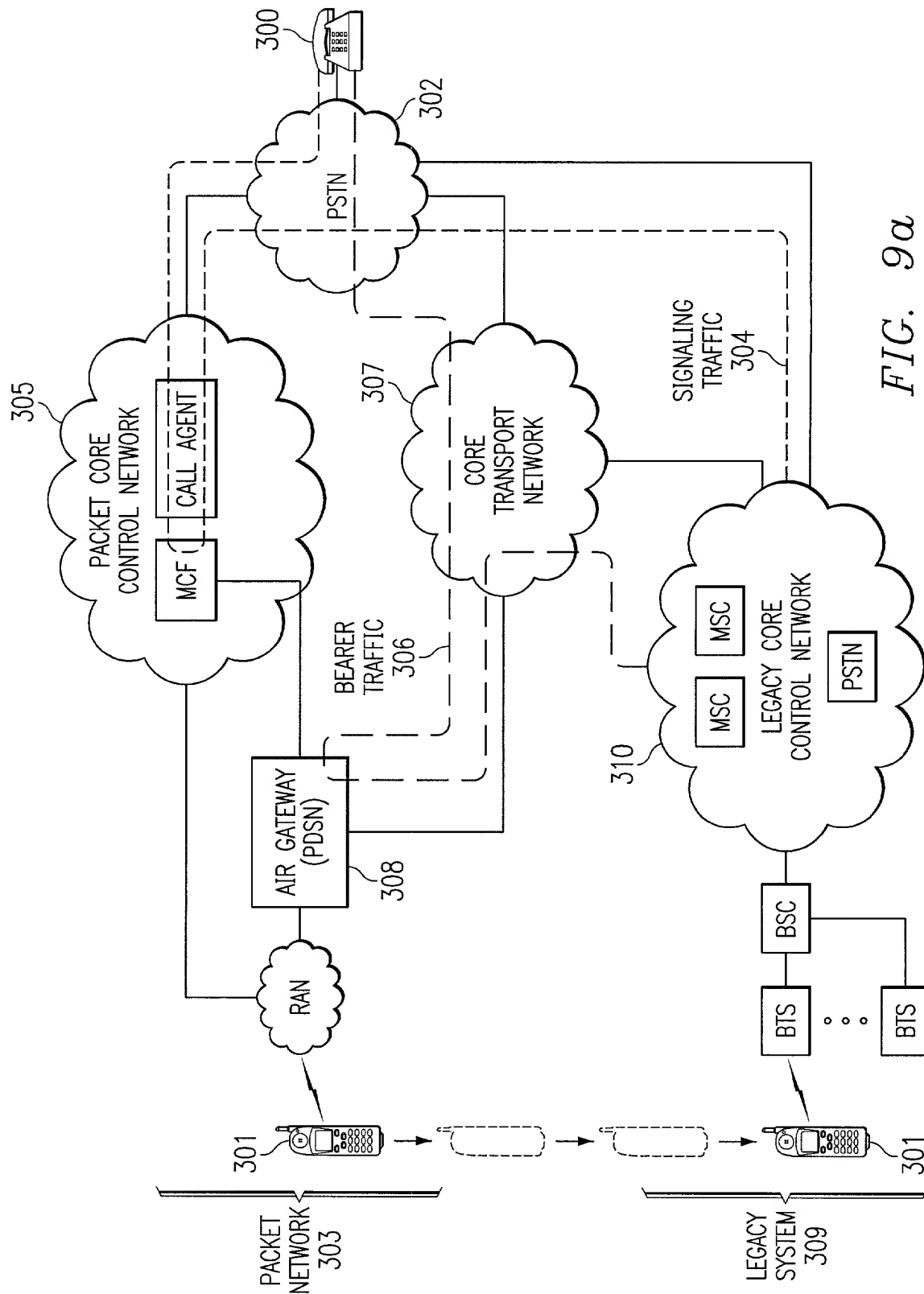


FIG. 9a

FIG. 9a

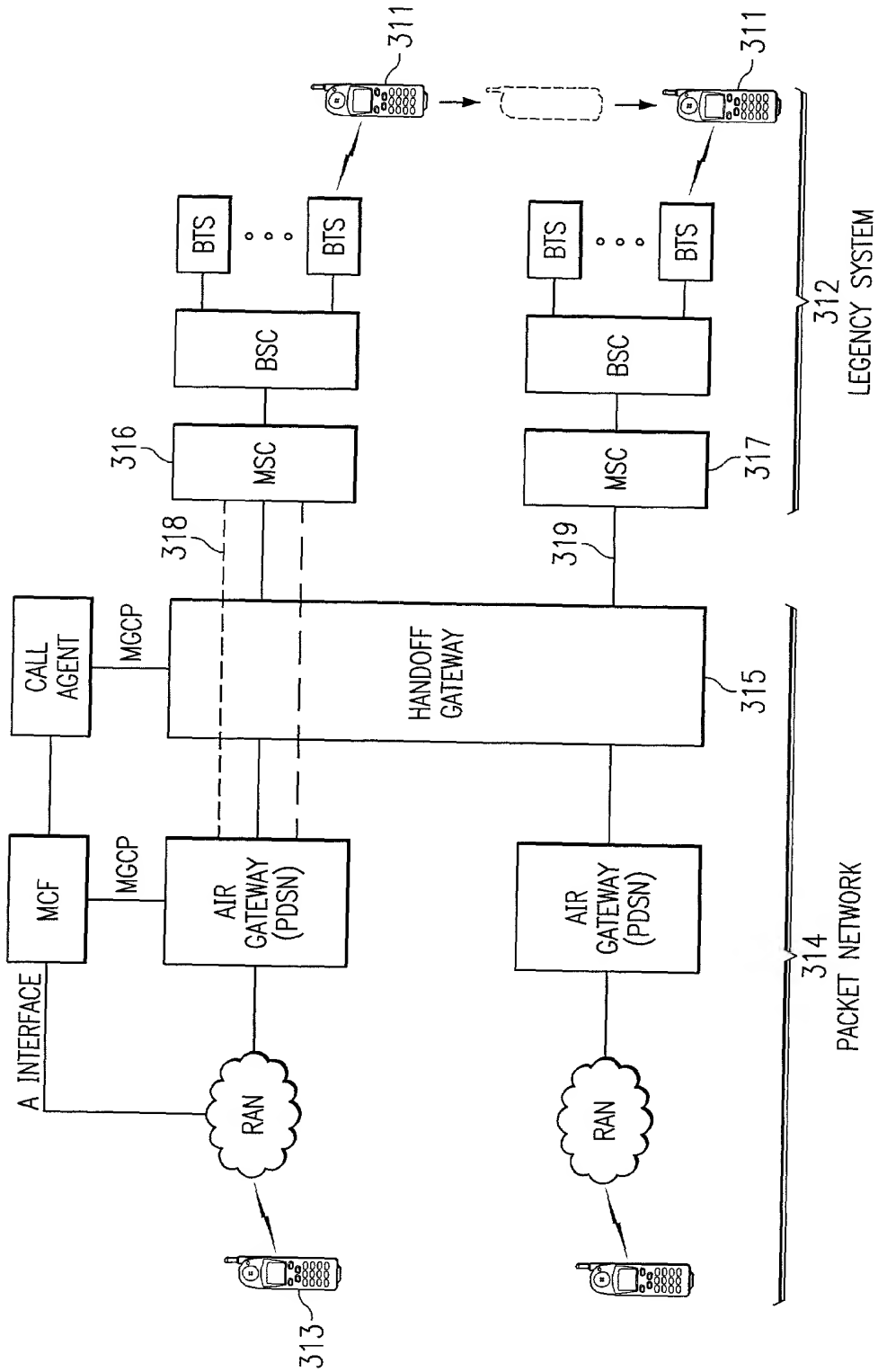


FIG. 9b

FIG. 11a

SIP MESSAGES FOR FEATURE ACTIVATION/DE-ACTIVATION

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
CM SERVICE REQUEST	IS-634	INVITE	TO:FEATURE CODE FROM:MIN	NONE	NONE	CA NOTIFIES HLR VIA FEATREQ MSG
FEATUREREQ RESPONSE FROM HLR	IS-41	200 OK 4xx	TO:MIN	NONE	TREATMENT CODE: CONFIRMATION TONE OR ANNOUNCEMENT	MCF APPLIES THE TREATMENT BASED ON TREATMENT CODE AND RELEASES THE CALL. MCF WILL REQUEST IAG TO APPLY CONFIRMATION TONE BASED ON THE SIP RESPONSE

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FIG. 11b

SIP MESSAGES FOR ABBREVIATED DIALING

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
CM SERVICE REQUEST	IS-634	INVITE	TO:DIALED DIGITS FROM:MIN	NONE	NONE	

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FIG. 11c

SIP MESSAGES FOR CALLING NUMBER IDENTIFICATION PRESENTATION/RESTRICTION (CNIP/CNIR)

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
CM SERVICE REQUEST	IS-634	INVITE	TO:CALLEDNUMBER FROM:MIN	NONE	NONE	CALL AGENT FORMATS THE CALLING NUMBER IN ISUP IAM MSG FROM CALLS TO PSTN ON LEGACY MSC USING FROM DATA AND USER PROFILES BASED ON CNIR FEATURE OF THE MS'S PROFILE
ISUP IAM	PSTN/MSC I/F	INVITE	TO:MIN FROM:	NONE	NONE	CALL AGENT WILL INCLUDE THE FROM FIELD DATA IF THERE IS NO RESTRICTION ON PRESENTATION. ALTERNATIVELY A STRING OF UNKNOWN OR ANONYMOUS

FIG. 11d

SIP MESSAGES FOR CALL FORWARDING UNCONDITIONAL (CFU)

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
INFODIR FROM HLR TO CA	IS-41	INFO	TO:MIN	CFU	TREATMENT CODE	MCF APPLIES THE A SINGLE ABBREVIATED ALERT TONE TO MS VIA PDSN BASED ON ALERT CODE
FLASH WITH INFO ACK FROM MS	IS-634	1xx 200 OK	FROM:MIN	NONE	NONE	RESPONSE SENT TO CA

FIG. 11e

SIP MESSAGES FOR CALL FORWARDING NO ANSWER (CFNA)

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
PAGE OR ANSWER TIMEOUT	IS-634	408 REQUEST TIMEOUT	TO:CLDNO. FROM:MIN	NONE	NONE	

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FIG. 11f

SIP MESSAGES FOR CALL WAITING

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
ISUP IAM	HOME MSC	INVITE	TO:MIN FROM:CLGNO	NONE	NONE	SECOND CALL REQUEST TO MS. MCF SENDS FLASHWITHINFORMATION
FLASHWITHINFORMATION (INITIAL RESPONSE) OR TIMEOUT	IS-634	200 406 NOT ACCEPTED	TO:CLGNNNO FROM:MIN AS ABOVE	NONE NONE	NONE NONE	IF MS ACCEPTS SECOND CALL THE FIRST TIME MS DOES NOT ACCEPT SECOND CALL
FLASHWITHINFORMATION (SUBSEQUENTLY)	IS-634	INFO	TO:CLGNNNO FROM:MIN	FLASH	NONE	SUBSEQUENTLY WHEN MS SWITCHES TO OTHER CALL LEG

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FIG. 11g

SIP MESSAGES FOR VOICE MAIL WAITING NOTIFICATION

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
QUALDIR REQUEST FROM HLR	IS-41	INFO	TO:MIN	NOTIFY	MSGWAITNOTIFICATIONCOUNT MSGWAITNOTIFICATIONTYPE	HLR NOTIFIES CA VIA QUALIFICATIONDIRECTIVE WITH MSGWAITNOTIFICATIONCOUNT AND MSGWAITNOTIFICATIONTYPE. CA WILL FORWARD THE NOTIFICATION USING INFO MSG WITH MSG WAITING INDICATION PARAMETER TO MCF. IF MS IS REGISTERED OTHERWISE WAITS FOR THE MS TO REGISTER
QUALDIR RESP TO HLR FROM CA	IS-41	200 OK 4xx	FROM:MIN	NONE	NONE	MCF RESPONSE TO CA FOR MSGWAITINGNOTIFICATION AND CA RESPONDS TO HLR

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FIG. 11h

SIP MESSAGES FOR VOICE MESSAGE RETRIEVAL

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
CM_SERVICE_REQUEST FROM MS	IS-634	INVITE	TO:MIN FROM:MIN	NONE	NONE	CA DETECTS REVERTIVE CALL WHEN MS DIALS IT'S OWN NUMBER. CA SENDS LOCREQ TO HLR IF VOICE MESSAGE SERVER IS NOT CONFIGURED ON THE CA
LOCATIONREQUEST RESPONSE FROM HLR	IS-41	1xx 200 OK	TO:MIN	NONE	NONE	LOCATION REQUEST RESPONSE CONTAINS THE TERMINAL PARAMETERS WHICH WILL CONTAIN THE DESTINATION DIGITS OF THE VOICE MAIL SERVER. CA PERFORMS ROUTING TO THE VOICE MAIL SERVER AND SETS UP THE CONNECTION TO VOICE MAIL SERVER. MCF HANDLES THE RESPONSE FROM CA AND SETS UP THE BEARER PATH

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FIG. 11i

SIP MESSAGES FOR CALLING NAME PRESENTATION AND RESTRICTION (CNAP AND CNAR)

MCF/CA INTERFACE EVENT	MCF/CA INTERFACE	SIP REQ/RESP	SIP HEADERS/ PARAMETERS	EVT (OPN)	SIP EXTENSION PARAMETERS	NOTES
ISUP IAM	PSTN/MSC I/F	INVITE	TO:MIN	NONE	CGNAME	CA INCLUDES THE CALLING NAME IN THE EXTENSION PARAMETERS

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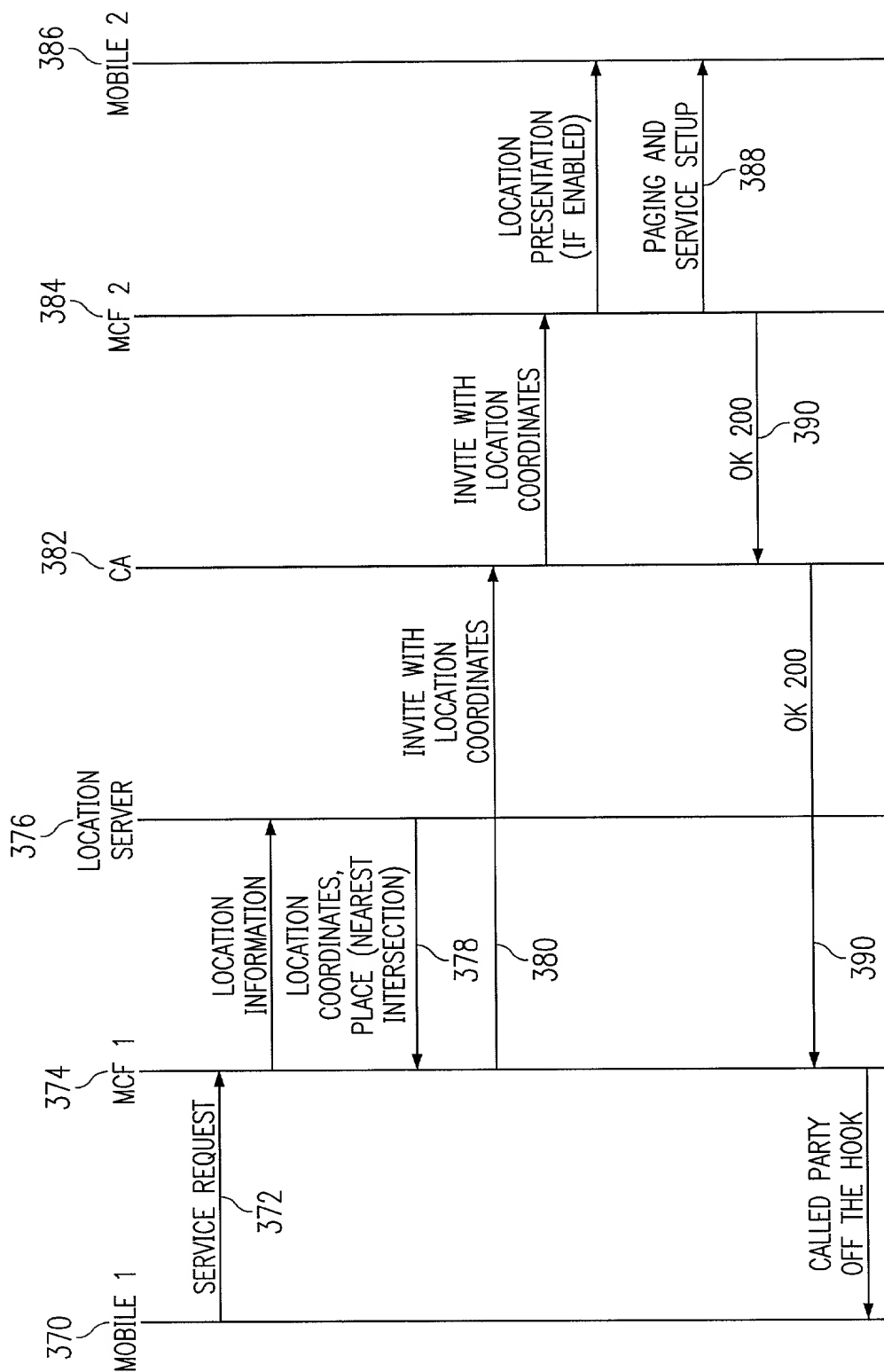


FIG. 12